JOURNAL OF GERIATRIC ONCOLOGY 5 (2014) 315–322

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Pre- and intra-operative variables associated with surgical complications in elderly patients with gynecologic cancer: The clinical value of comprehensive geriatric assessment

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ARTICLE INFO

Article history:
Received 24 June 2013
Received in revised form
5 February 2014
Accepted 31 March 2014
Available online 21 April 2014

Keywords:
Geriatric assessments
Postoperative complication
Elderly
Gynecologic neoplasms

ABSTRACT

Objective: The aim of this study is to evaluate the associations of pre- and intra-operative variables including comprehensive geriatric assessment (CGA) with surgical complications in elderly patients who underwent primary surgery for gynecologic cancer.
Methods: Sixty consecutive patients ≥70 years of age who were scheduled to undergo elective surgery for the treatment of gynecologic cancer were preoperatively assessed by CGA. Every category of CGA, performance status (PS), and brief fatigue inventory (BFI) as well as surgical complexity were evaluated for 30-day surgical complications.
Results: The overall postoperative complication rate was 30.0% (18/60) including 9 (15.0%) major and 8 (13.3%) multiple complications. Univariate analysis revealed that dependent instrumental activity of daily living (IADL) was associated with any ($p = 0.023$) and multiple complications ($p = 0.019$). Poor PS was associated with major ($p = 0.021$) and multiple complications ($p = 0.014$). Multivariate logistic regression analysis revealed that high surgical complexity was the most independent predictor of any, major, and multiple complications, whereas poor PS was the independent predictor only for multiple complications (odds ratio 10.7, 95% confidence interval 1.7 to 90.2, $p = 0.043$). There was no CGA component which could independently predict postoperative complications.
Conclusion: Surgical complexity can predict any, major, and multiple postoperative complications, while PS seems to be useful in predicting multiple complications in elderly patients with gynecologic cancer. In this small study, a CGA was not useful in predicting postoperative complications.

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http://dx.doi.org/10.1016/j.jgo.2014.03.004
1879-4068/

1. Introduction

As the elderly population is growing rapidly worldwide, the incidence of cancer, an aging-associated disease, is increasing. During the period from 2010 to 2030, a 67% increase in cancer incidence is anticipated for adults older than 65 years of age, compared with an 11% increase for younger adults in the United States.[1] The incidence of ovarian cancer is maximal in the seventh to eighth decades of life, and 43% of new cases occur in women over 65.[2,3] In 2009, the incidence of uterine cervical cancer of Korean women aged 75 and older (33.1/100,000) is higher than that of women aged 40 years (22.9/100,000).[4] Thus, it seems clear that oncologists are expected to treat more elderly patients with gynecologic cancer in the near future and have to often decide whether the expected benefits of standard treatment are superior to possible risks in this elderly population.[5]

Surgery is a mainstay of treatment for patients with gynecologic cancers such as uterine corpus, ovarian, and uterine cervical cancers.[6–8] Older patients are believed to be at increased risk of developing postoperative complications due to decreased physical reserve and increased vulnerability.[9] In fact, under-treatment has often been justified solely due to the ungrounded assumption that all elderly patients with cancer are more vulnerable to surgical complications than their younger counterparts.[10] However, surgical decision-making in this population is not simple because of the heterogeneity of health and socioeconomic status of these patients. There is ample evidence that chronological age should not be a contraindication for surgical treatment of elderly patients with gynecologic cancer. A retrospective cohort study of 171 patients with uterine or ovarian cancer showed similar rates of early postoperative complications between <70 and ≥70 years of age.[11] Wright et al. also reported similar optimal cytoreduction rates, complication rates and survival rates between <70 and ≥70 years of age in 175 patients with ovarian cancer.[12] Nonetheless, there are no guidelines to help identify elderly patients with cancer at greatest risk of surgical complications or consensus on the assessment of the risk of surgical complications for the elderly patients with cancer.[13]

Comprehensive geriatric assessment (CGA) is a multi-displinary systematic evaluation of physical functioning, comorbidity, polypharmacy, nutrition, cognition, psychological and emotional status, and social support in elderly patients.[14–16] Accumulating evidence suggests that a geriatric intervention using CGA may have positive effects on health, functional status and mortality.[17] Preoperative Assessment of Cancer in the Elderly (PACE) was developed specifically for surgical oncology patients to determine the suitability of older patients for surgical interventions.[10] Although there have been a few studies demonstrating PACE as a useful tool for identifying appropriate surgical candidates among elderly patients with cancer, the reliability of this tool in patients with gynecologic cancer has not been confirmed yet.

In the present study, we evaluated the associations of pre- and intra-operative variables including CGA with surgical complications in elderly patients who underwent primary surgery for the treatment of gynecologic cancer.

2. Materials and Methods

2.1. Patient Criteria and CGA Interview

A total of 63 consecutive patients ≥70 years of age who were admitted to Seoul National University Hospital for elective surgery for the treatment of gynecologic cancer from November 2009 to October 2011 were screened for eligibility. Two patients refused to join the study. There were no other exclusion criteria. Of sixty-one who signed an informed consent, sixty were finally included in the study except one who cancelled surgery after completion of CGA.

Interviews for CGA were conducted 1–2 days prior to surgery by a gynecologic oncologist with training in geriatrics. A validated Korean version of each instrument in CGA was used in the patient interview.[19,20] On the basis of PACE study, brief fatigue inventory (BFI), performance status (PS), and the American Society of Anesthesiology (ASA) scale were also included in CGA interview. The instruments evaluated are listed with their scoring criteria in Table 1. In cases of some degree of cognitive impairment with poor communication, the CGA interview was attended by their caregivers who have a close relationship with the patient.

2.2. Postoperative Data Collection

After the patient was discharged, her medical records were reviewed for the data of 30-day surgical complications, in-hospital mortality, hospital stay, and other clinicopathologic characteristics. All 60 enrolled patients were followed up for 30 days after the operation for surgery-related complications.

The category and grade of screened surgical complications were from Memorial Sloan-Kettering Surgical Complication Criteria 12/99.[21] According to these criteria, any complication included any grade of complication. Major complications included any complication of 2 or higher in grade, which needs more intensive treatment than supportive care or first-line oral medical therapy. Multiple complications were defined as 2 or more complications occurring simultaneously or sequentially. Postoperative delirium was diagnosed when more than 2 out of 5 items of the validated Korean version of delirium assessment scale were positive: disorientation, inappropriate behavior, inappropriate words, delusion/hallucination, and delayed psychomotor activity. Surgical complexity score was provided for every surgical procedure performed based on the criteria suggested by Aletti et al..[22] Briefly, point 1 was provided for the procedures including intrapelvic procedures such as total hysterectomy with bilateral salpingo-oophorectomy (BSO), pelvic lymphadenectomy, and paraaortic lymphadenectomy, whereas most abdominal procedures, such as large bowel resection, splenectomy, liver resection, and diaphragm resection were given 2 or 3 points. Surgical complexity for the procedures that were not in the criteria was scored considering the relative severity of them: 3 for radical hysterectomy and 1 for wide excision of the vulva. The points were finally grouped into three categories for analysis: low (≤3), intermediate (4 to 7), and high (≥8). The final category of surgical complexity of the